

# Mars and Beyond:

A Unique Exercise to  
Communicate Science on Indian TV

**Abstract:** On September 24, 2014 the first Indian attempt to reach Mars, Mars Orbiter Mission, was successfully inserted into Martian orbit. During the preceding five weeks, Rajya Sabha TV in association with Vigyan Prasar, DST and NISCAIR, CSIR telecasted a number of programmes titled 'Mars and Beyond: Journey of Indian Science'. This paper documents the effort and suggests several lessons for science communicators in India.

## Introduction

For most of us after school it is the media, which is the main and perhaps only source of S&T information and knowledge. Of various media, today in India TV has acquired a significant place amongst all the media. A survey (Shukla 2010) observes that literate youth spend as much as 98 minutes daily viewing TV, 32 minutes reading newspapers and 70 minutes surfing the net. Another study indicates that an average viewer spends around 130 minutes per day watching TV (Deloitte 2013; p. 13). In a survey conducted at Ardh-Kumbh in 2007, 70% reported that they accessed information through television (Raza 2009). This paper documents the unique programme conducted jointly by Rajya Sabha Television, Vigyan Prasar and CSIR-NISCAIR during August-September 2014 around the India's Mars Mission reaching Mars insertion on September 24, 2014.

## Television in India

Journey of television in India started for promoting development and serving the cause of the poor and the underprivileged. It is also unique, for it was only in India that advanced satellite TV came much before it reached developed nations. The earliest deployment of television in India was the often-quoted SITE experiment jointly carried out by Indian Space Research Organisation (ISRO) and Education department. The

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Satellite Instructional Television Experiment (SITE) was an important landmark not only of the Indian television but also use of television for development. It was conducted from August 1975 to July 1976 in 2400 selected villages around the country. The US Government loaned the ATS-6 NASA satellite to the Indian government, using which, the Father of Indian Space programme Vikram Sarabhai, proposed that quality education, development and communication could be taken to the far reaches of India. SITE was an experimental programme, whose main objective was to evaluate the potential of satellite television in rural development.

For the use of the SITE, specific instructional programs were produced and beamed to the selected 2400 villages in the states of Andhra Pradesh, Orissa, Karnataka, Rajasthan, Bihar and Madhya Pradesh. Most of the programs were in the areas of rural health and hygiene, adult literacy, agriculture, nutrition and national integration. Realising the potential of the media to establish the sovereignty of the nation and mobilise people into citizen, the same communication means was

also used to telecast state celebrations such as Independence Day, Republic Day and other national events, nationwide (Kumar, 1998).

*Views expressed here does not reflect the opinion or views of any of the organisations that the author is associated with.*

Around the same time, terrestrial television, Doordarshan, entered into Indian scenario, a small transmitter broadcaster programme in the evening daily, way back in 1959. In the initial years, television reached about 50 kilometres around Delhi, and was seen as an experiment in social communication for which small teleclubs were organised in Delhi and provided with community television sets. The television system was expanded around 1980s, in the wake the Delhi ASIAD games. Transmission in colour also commenced during the same time (Muppidi, 1998). Curiously just in 1984, for the period of four months, every single day a new transmitter was established, taking the total number of transmitters to 172 reaching 52% of the country's population (Malhan 1985).

As India became independent in 1947, the new nation found communication as an important conduit for nation building. The Ministry of Information and Broadcasting was instituted with the objective to

'inform, educate and entertain the people'. The media units of the Ministry such as All India Radio, Field publicity unit, Films Division were to create a climate of awareness of the directions of development and ensure people's participation in the implementation of the government's plans and programmes (Doordarshan 1994; p.1). In this paradigm, Doordarshan's main objectives were a) to act as a catalyst for social change; b) to promote national integration; c) to stimulate scientific temper among the people; d) to disseminate the message of family planning as a means of population control and family welfare; e) to stimulate greater agricultural production by providing essential information and knowledge; f) to promote and help in preservation of environmental and ecological balance (Kumar 1998 & Muppidi 1998). As was the case of SITE, the programmes were a mix of education, instructional and people oriented programmes with programmes aimed at creating citizens out of people. The second aspect, which is essentially political often got reduced to being government propaganda and compromised the brave goals set in the first place. Doordarshan and All India Radio became simultaneously a public broadcaster with intention of creating an informed public sphere as well as a government media. Consequently, technology of Television was seen as a







tool to extend state power over society (Rajgopal 1993) and Doordarshan was perceived as a propaganda apparatus of the ruling party (Singhal & Rogers 1989).

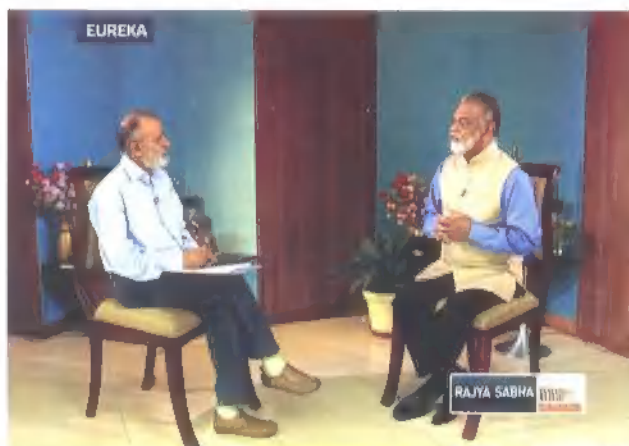
In 1990s, Doordarshan's pivotal role in Indian TV scenario was shaken with the arrival of the private satellite broadcasters. Soon Indian players entered the television industry thereby leading to enormous expansion. Since then, the very nature of Indian broadcasting has changed. Television has transformed from a medium devoted to development, communication and the cause of the marginalised, to a true middle-class medium. Contemporary Indian television is divorced from the realities of the 'other half of India that lives in abject poverty and deprivation, thus presenting a distorted view of social reality'.

## Science in Indian Television – then and now

School television (STV) was launched in October 1961 as an organised, systematic and sequential support to formal school instruction (Kumar, N., & Chandiram, J. 1967). Teachers appreciated STV as a tool for teaching

and presentation of content (Kumar 2000). Jai Chandiram, who spent 35 years in Doordarshan, one of the first women to become Dy Director General reminiscent of her early years recalls how after returning to India in 1961 after studying theatre, she joined the All India Radio's new TV division as a young casual. She was assigned to School Television and recalls the first TV school science programme she produced. "Experimenting with lights for demos on the nature of light, we found that the studio window between 4:00 to 4:20 pm gave us the rays of the sun to go through the prism and demonstrate VIBGYOR. What an achievement, catching light and going live! The technical staff, Madan Mohan, Mr. Desikachar and others were fully involved in finding solutions to record these simple experiments. Remember, we had few recording facilities, the big 2 tape recorders, the huge cameras and no air conditioning (Chandiram 2009)."

Further capturing the ethos that prevailed among the TV professionals in those times says "innovation was a necessity for achieving dreams and impossible realities. The spirit of adventure and exploration was exciting and was a driving force. After partition the schools were in



shambles, new curriculum, untrained teachers, no proper science laboratories; a story which remains unchanged. The emphasis in television was on science, language, social studies and maths programs" and on the impact it had in those days. "The TV lessons were a role model for class teachers, children were asking questions, getting the school lab cupboards opened and above all the television was forcing teachers to attend classes regularly as they had to provide feedback (Chandiram 2009)."

Television in India, as we had stated earlier, changed from public service medium, to a commercial mass medium around 1990s. Although the Doordarshan also was caught up in the swirl wind of commercialisation, 'Doordarshan can be credited with occasional awakening to the cause of science on small screen' (Kala 2002). Doordarshan has always had a certain component of science programming, albeit often made in a ham-handed way. Doordarshan should be credited for commissioning programmes like *Turning Point* and *Quest* which were very popular when first shown and had the best of aesthetic sensibilities of those times. While the satellite TV increased in number and reach hardly any could be credited with TV Science show having lasting public memory. It was the much maligned government broadcaster DD which took the lead in such programming.

During 2005 a micro study of three Gujarati TV channels (regional Doordarshan and two private channels) were conducted (Indu Puri 2006) for about 3 months. Of the 8500 programmes, which were telecast during this period, about 25% programmes had S&T mentioned in the narration. This includes from weather forecasting to S&T information provided in the soap-

drama. However, a critical analysis of the data shows that 24% were of one minute or shorter duration, 33% were of 1-5 minutes duration and the rest were of longer duration. Only 3.6% of the programme were of 30 minutes or above. That the mainstay of the S&T in TV were reporting of S&T related events; say like opening of a new institution or launch of a rocket. Analysis of the content also reveal that majority of the programmes were on medicine and health (27%), agriculture (17.5%) and environment (13%). Only the remaining 42.5% were on all other areas of science and technology including meteorology, physics etc. 41% percent of S&T based programmes came during the morning hours between 6 and 8 am, that is, they were actually educational in nature. Of the total science technology programmes, only 16% of the programmes came during the evening hours (8-10 p.m.) that were considered 'prime time'.

In another study (Indu Puri 2006), Doordarshan, National Geographic, Discovery and Aaj Tak were examined for about a month. While in the Doordarshan news, of the total 138 stories, 14 were on S&T; that is 10.14%, on the contrary, in Aaj Tak, of the total 161 news reports and 91 news programmes, none was on S&T. The study concludes that the 'news channels do not give much coverage to science and technology news/programmes. It was also found that there is no regular slot for S&T in prime-time in Doordarshan or Aaj Tak.'

The contemporary TV programmes in India are dominated by themes such as fashion, lifestyle, sports particularly cricket, gadgets and celebrities. In the genre of news, this is particularly stark as the above-mentioned items have become newsworthy whereas the struggles and concerns of rural India and those of the urban poor have been relegated to the backburner. Little or no space is devoted to issues related to how the other half of India as distinct from the young urban middle-class lives and dies in rural and urban India (Thomas 2010).

At times science is indeed 'covered' rather in overdose. One such instance is when swine-flu epidemic was suspected in August 2009, Indian commercial TV went overboard sensationalising it. Barring one news channel, almost all other channels were filled with non-stop visuals of people in face masks, crowds lining up in front





of hospitals and grief stricken families who have lost a loved one. Panicked by the constant dose of alarming Television news led hundreds of people to rush to hospitals to get tested even if they had the mildest symptoms. Commenting on this mindless sensationalist trend a media commentator wonders “has the media lost perspective?” and says “If you look at just the numbers affected and the fatalities, you would conclude that it has. More people die each day from malaria, infection, diarrhoea and other gastro-intestinal infections, and tuberculosis than have died of swine flu since the first incidents were reported. Therefore why the overdrive by the media?” and chides “One obvious reason is that when a disease hits the metros or the middle classes, it becomes a subject worth pursuing but when it affects people in remote areas, no news organisation is willing to invest in sending people to cover it (Kalpana Sharma 2009)”. That is when science story is a ‘spectacle’ or could be given a spin to make it look like ‘spectacle’, science finds a place.

It is interesting that today, with a plethora of channels, there is not a single private Indian channel which devotes any significant time to science matters, unless it is a spectacle. Often lack of viewers or sponsors are

adduced to explain away the current scenario. No private channel is willing to provide space for serious science, fearing it would alienate and reduce cumulative TRP. Discovery and National Geographic and other such knowledge genre channels do have substantial science programming, but almost all of them are foreign imports - there is virtually no coverage of science made specifically for the Indian viewer and with the Indian context in mind. Modest support by organisations like National Council for Science and Technology Communication (NCSTC), Vigyan Prasar, Public Service Broadcasting Trust (PSBT) etc. infuse science content into the Indian TV scenario. However, they are far too less compared to the total TV time space in India.

### RSTV – an emerging public broadcaster

Rajya Sabha Television (RSTV) is one of the two public broadcasters in India. Rajya Sabha TV was established by the upper house of Indian parliament as part of making its proceedings transparent and widely available to the citizens. The channel was started on 26th August 2011 and became a 24x7 channel on 18th January 2012.

The channel primarily aimed at providing in-depth coverage and analysis of parliamentary affairs especially



the functioning of and developments related to Rajya Sabha. In view of this, the primary aim of the RSTV is live coverage of the proceedings of the Rajya Sabha. During sessions of parliament, apart from telecasting live coverage of the proceedings of Rajya Sabha, RSTV presents incisive analysis of the proceedings of the House as well as other day-to-day parliamentary events and developments. The channel has endeavoured, for the first time in India, to offer deeper insights into the functioning of Parliamentary Committees to the public. Moreover, it focuses special attention on the legislative bills upcoming as well as the ones under consideration of the Parliament. Conscious of its role as a responsible and responsive public broadcaster, RSTV has conceptualized its programmes and shows based on a vibrant relationship between the Parliament and the people that exists in the largest democracy of the world. In fact, it seeks to act as a bridge between the elected and the electors.

As per the rules and regulations, it is mandatory for multi-system operators and cable operators to carry 24

channels, which includes DD channels, Gyan Darshan, Lok Sabha TV (LSTV) and Rajya Sabha TV in places where digital access (DAS) is available. In non-DAS area eight channels are compulsory and that includes RSTV and LSTV. Direct to home (DTH) operators in India also have to carry free of cost, RSTV. Thus in Cable and Satellite (C&S) segment of Indian TV RSTV has complete reach. Simultaneous webcast of the channel is available on the homepage of Rajya Sabha i.e. [www.rajyasabha.nic.in](http://www.rajyasabha.nic.in), RSTV i.e. [www.rstv.nic.in](http://www.rstv.nic.in) as well as YouTube.

While focusing its attention on parliamentary affairs, RSTV has emerged into a major national public broadcaster. RSTV has programmes on current National and international affairs, RSTV also provides a platform for telecasting information and knowledge based programmes for its discernible viewers. Current affairs, international relation, art, culture, science, and technology are some of the major focus of the RSTV in addition to its primary duty of live coverage of the proceedings of the Rajya Sabha.



Delineating the role of RSTV, its CEO says "Rajya Sabha Television was started primarily to televise live the proceedings of Rajya Sabha. It was envisaged as a news and current affairs channel that aimed to broadcast news, in-depth programmes on social and current issues, impartial and non-motivated debates on issues of concern to the people of India, besides the live telecast of the proceedings of the House. The channel also aims to document the history of independent India and its journey to being a self-reliant and sustainable democratic nation that is multi-party, multi-linguistic, multi-cultural and multi-religious. It also aims to produce programmes on the salient features in the Constitution of India, like scientific temperament, democratic values, fundamental rights and directive principles. It also produces programmes to showcase diverse cultural tradition of India and the contemporary developments in the fields of art and culture."

Directed by Shyam Benegal the prestigious serial 'Samvidhan', produced by RSTV recounting the history of the 'The Making of Constitution of India' has been widely acclaimed. RSTV has six half an hour news bulletins daily in Hindi and English, and a weekly round up with international news called 'world panaroma'. Current affairs debates 'Desh Deshantar' in Hindi and 'Big Picture' in English on the emergent issues and a weekly current affairs debate 'Sarokaar' in Hindi looks at significant social issue relevant to nation building. RSTV also has programmes like One-to-one weekly interviews 'Tarkash' in Hindi and 'To the Point' and 'Quest' in English, weekly discussions 'State of the Economy', 'Policy Watch', 'Media Manthan', 'India's World' provides a indepth picture on social economic and political front. A special show in the life of sitting MPs – 'Its my Life', brings in human element.

With programmes like 'Shaksiyat' – a weekly show on personalities in the field of culture, 'Guftgu' – a weekly show with film personalities, 'Colours of India' – a weekly magazine on cultural events, 'Unki Nazar, Unka Shahar' – shows on prominent signatures from art and literature, RSTV accords a prime place for arts and culture in its air-time.

RSTV also provides significant space to science programmes. Along with Vigyan Prasar, it telecasts weekly science magazine 'Gyan Vigyan' and 'Science Monitor' in Hindi and English respectively. This show

highlights the Science and Technology developments in Indian labs and institutions. 'Eureka' is a weekly interview based show with a leading Indian scientist. RSTV also has a slot for science documentaries and currently it is telecasting a science serial 'A Question of Science' based on advance R&D work taking place in India.

## Mars and Beyond – RSTV's initiative

CEO of RSTV, Gurdeep Sappal says 'RSTV aims to produce programmes on the salient features in the Constitution of India, like scientific temperament, democratic values, fundamental rights and directive principles. The programmes on the science and scientific temperament are being produced and telecast in consonance with the said aim.' It is in this background that Vigyan Prasar and CSIR-NISCAIR joined hands with RSTV to organise a 6 week long TV show to celebrate ISRO's Mars mission and to highlight achievements of Indian Science.

Gurdeep Sappal, Sanjay Kumar, Amirta Rai, Vineeth Dikshit, Girish Nikam from RSTV Dr T V Venkateswaran and Navneet Gupta from Vigyan Prasar Guhar Raza from CSIR-NISCAIR formed the core team to conceive, plan and execute the unique TV shows based public campaign for science communication.

The special telecast campaign on Mars and Beyond – Journey of Indian Science was organised between August 18, 2014 and September 24, 2014, which was classified into three categories:

a) Tempo creation and setting the context - highlights of Indian achievements in the recent past

b) ISRO and Indian space programme with special reference to Mars Mission

c) The eve of the insertion date and on the date of insertion – live coverage for more than 36 hrs.



The three sections of the campaign was like a classical music performance; alap; slow elaboration, jod, further elaboration and tempo creation and finally the fast crescendo, jhala. In these six weeks, the initial five weeks were devoted to five significant areas of Indian science in the contemporary times to set the tone. The next 8 days from September 15, 2014 to September 22, 2014 were devoted to highlighting the history and achievements of Indian space exploration, ISRO and the Mars orbiter mission. The last two days, 23rd and 24th was live programme all through the day on the Mars Orbital Insertion.

### Alap

Just like an alap in a concert, the first 4 weeks were used to build the tempo. During the first four weeks, on six days of the week (except Sundays) telecast was organised.

**Table 1**

Genre of the programmes during the first four weeks

Sl no	Day of the week	Genre of the programme
1	Monday	Documentary on Indian scientist
2	Tuesday	Documentary on the theme of the week
3	Wednesday	Studio-based panel is discussion with phone-in audience participation
4	Thursday	Panel of experts in the midst of a select audience; shooting at a location appropriate to the theme
5	Friday	Career guidance programme and profile of academic and research institute related to the theme selected
6	Saturday	Eureka – interview with a scientist



Each of the first four weeks had a special theme. First week it was meteorology focusing on how India Meteorological Department has been able to forecast and predict cyclones, thereby save lives and properties. During the second week the theme was fast breeder reactor. The test reactor has been successful and the first ever-commercial reactor is in the rollout stage. The third week was on the proposed India based Neutrino observatory. The fourth week was on Thirty-meter telescope.

Following documentaries on Indian scientists were telecast during this first four weeks. Ramanujam directed by Nandan Kudiyadi and produced by NCSTC, Homi Babha directed by Gauhar Raza, CV Raman directed by Nandan Kudiyadi and produced by NCSTC, J.C Bose directed by Rahman and produced by Vigyan Prasara.

The programmes "Taming the Cyclone" directed by Sandeep Yash, "Fast breeder reactor" directed by Rakesh Andania, "Neutrinos the little ones" - directed by Rajendra and produced by Vigyan Prasara, "Thirty-meter telescope" produced by Vigyan Prasara and directed by Deepak Verma were shown.

A show on the institutions and career guidance on the four areas was directed by Rakesh Andania and presented by Ms. Smriti Rastogi and received wide acclaim from the student community.

Gauhar Raza conducted interviews with Laxman Singh Rathore, Director General India Meteorological Department and Ratan Kumar Sinha, Chairperson, Atomic Energy Commission. Interviews with Prof Naba Mondal, spokesperson India based Neutrino observatory and Prof Eswar Reddy spokesperson for India committee on TMT were conducted by Dr T V Venkateswaran. Sanjay Kumar and Ms Aruna Thakur produced the interview-based programmes.

Studio based discussions were anchored by Ms Amrita Rai. The studio panel usually had four experts. The programme went live and phone-in questions and comments were taken. Each show had more than 30 + callers but only about ten were able to be accommodated in the show.

**Table 2**

**Panellists in the studio based discussion programme**  
Anchor: Amrita Rai

Sl no	Theme	Panellists
1	Meteorology and cyclone	Dr. K.J. Anandha Kumar, NIDM; Prof. Santosh Kumar, Director, SAARC Disaster Management Center Dr. K. J. Ramesh and Dr M Mahapatra, from Ministry of Earth sciences
2	Fast Breeder Reactor	Dr. P R Vasudeva Rao (Director, IGCAR, Kalpakkam); Dr. D Raghunanadan (Delhi Science Forum); R Ramachandran (Journalist); Dr T V Venkateswaran
3 of	India based neutrino project	Prof. G Rajasekaran (Institute Sciences, Chennai); Prof. Y P Viyogi (Variable Energy Cyclotron Centre, Kolkata); Prof. Jasbir Singh (Physics Department, Punjab University, Chandigarh)
4	Thirty meter telescope	Biman Basu, science communicator TV Venkateswaran, scientists, Amithabh Pandey, amateur astronomer and Prof Patrick DasGupta, Delhi University

In addition to the above audience based shows were held at out-door locations such as IMD Mausam Bhavan at New Delhi, TIFR campus in Mumbai, Kalpakkam Fast Breeder Reactor site, Telescope at Nainital, on the above themes. About 30-40 audiences, mainly students, and young people interacted with the experts. This dialogue brought in the specific features of the theme under debate.

**Table 3**

Panellists in the location based show with audiences

Sl no	Theme	Anchor/ Producer	Panellists
1	Meteorology and cyclone	Mr. Vishal Dahiya/ Sandeep Yash	M Mohapatra (Head, Cyclone Warning, IMD); B P Yadav (Head, Weather Forecasting Division, IMD); Pushap Raj Baidya (Head, Earthquake Department, IMD); Dr. Kotal (Scientist, NMD, IMD)
2	Fast Breeder Reactor	Mr. Vishal Dahiya/ Rakesh Andania	Dr. P R Vasudeva Rao (Director, IGCAR, Kalpakkam); Dr. Prabhat Kumar, CMD, Bhavini, Kalpakkam; G Srinivasan Group Director (RO & M), IGCAR; Dr TV Venkateswaran, Vigyan Prasar
3	India-based neutrino project	Ms. Neelu Vyas	Prof Amol Dighe, TIFR; Prof. Naba K Mondal, TIFR; Dr. D Indumathi, IMS, Chennai; Prof. Vivek Datar, BARC; Prof Mohammad Nizamuddin, DU
4	Thirty meter telescope	Mr. Vishal Dahiya	Dr. Wahab Uddin, Acting Director, ARIES; Dr AK Pandey, and Dr Shashi B Pandey ARIES and Mr. TS Kumar

**Jod**

As the day of Mars Orbiter Insertion neared, since September 15, the programmes were focused on Indian space programme, ISRO, its history and achievement. Discussions were also held on the scientific mission of the MOM. Prestigious two-part Inside ISRO was also

scheduled during this time. This included documentaries, interview with ISRO experts involved in MOM mission, panel discussion with ISRO experts, studio-based phone-in panel show and an exclusive interview with ISRO chief Prof R Radhakrishnan.

**Table 4**ISRO expert panel programme  
Producer Vineet Dixit

Sl no	Theme	Anchor	Panellists
1	MOM – India into deep space	Fank Rausan Pereira	Mr JD Rao General Manager Indian Space Data Centre; Mr Raghunath Deputy General Manager mechanical system ISRO; Mr M Pitchumani Deputy Director spacecraft ISRO
2	MOM The mission and its objectives	Fank Rausan Pereira	Dr. Mylswamy Annadurai Project Director, Indian Remote-Sensing Satellites (IRS) and Small Satellites; Dr. S Arunan Project director MOM; and Dr. Kesava Raju



**Table 5**

Studio based panel discussion with phone-in  
Anchor: Amrita Rai

S/no	Theme	Panellists
1	ISRO's journey	Dr T V Venkateswaran (Scientist); Mr. Biman Basu; Mr. Ashok Jain; Mr. R Ramchandran

A two-part programme titled Inside ISRO took the viewers inside the ISRO's satellite building facility, clean room, thermo-vac test chamber, acoustics test chamber and vibration test best etc. The second part of the programme also took the viewers to India's deep space network, that is the giant antenna established at Bayalalu and the MOX, mission control room where from not only the MOM but also all the low orbit satellites are being controlled. Produced by Vineet Dikshir and presented by TV Venkateswaran and Aruna Thakur, and Frank and Neelu Vyas providing anchor links, the programme had rare privilege of shooting inside the otherwise restricted areas of ISRO facilities? These programmes have had more than 10000 hits in the YouTube. The main highlight was exclusive interview with Dr R Radhakrishnan, Chairman ISRO. These programmes were well received and some of the shows were hosted by other web-portals including Down to Earth.

## Initial Mars Orbiters

As the MOM was slated to enter into Mars Orbit on 24th morning, a live coverage was scheduled from 10 am on 23rd of September 2014 that lasted until about evening of Sep 24. There was live coverage from Bangalore and studio panel and live phone-in interaction with viewers. Live coverage were also organised from Bangalore (planetarium) Delhi (Nehru planetarium) Kolkata (Birla Planetarium), Ahmadabad (Science city), Guwahati (Planetarium), Trivandrum (planetarium) and Bhopal (NCSM-Science Centre). Vigyan Prasar had joined hands with these institutions to organise a two day public event and RSTV camera were sent there for live inputs from these centers on Sep 23rd and 24th 2014. As the live units were placed at five different locations across the country in addition to Bangalore and the live phone-in available at Delhi, the entire nations participation and reactions could be weaved into the live

relay. Bytes from the public and experts from different locations could be gathered.

On Sep 23, RSTV OB van was placed at the Bangalore planetarium grounds and provided live link. Experts such as BS Shylaja, Director Planetarium, S K Subramaniya, formerly ISRO, Dr S Chatterjee, Dr Srikumar, Director Indian Institute of Astrophysics, TV Venkateswaran, Prof UR Rao, former chairperson ISRO, Dr. G S D Babu, MP Birla inst of Fundamental Sciences, Prof. Chandrakant Shukre Subramanaya, Prof Y S Rajan, ISRO Dr. C V S Prakash, ISRO, Dr Ravinder Kumar Banyal, IIA took part in panel discussions live from Bangalore. In Delhi, the studios had experts like Shri Dinesh Sharma, Dr R Ramchandran, Gauhar Raza, Shri B.S. Bhatia, Ajey Lele, Dr Arvind Ranade, Shri B.K. Tyagi, Shri Raguandan, Prof Patrick Dasgupta, V.P. Sandlas, Dr Avinash Khare, Shri Ved Prakash, Shri Amitabh Pande etc. who took part. Experts and commentators from various parts of the country were also integrated through the live set-up at various locations around the country. The experts provided comments and interpreted the events as they unfolded thus providing an incisive insight into the scientific and technical aspects of the mission.

Dr T V Venkateswaran reported live from the MOX providing live updates and technical information during the crucial period of the Mars Orbiter Insertion manoeuvres, interpreting the live data that was available in the large screen at the MOX complex.

## Discussion

The experience of the RSTV provides many lessons for future major science communication efforts through Indian TV.



Sevanti Ninan, a media commentator reviewing the TV talk shows in Indian TV says they are usually 'dialogue of the deaf' (Ninan S 2010) and 'Much sound [and] little sense' (Ninan S 1995b). Often discussion programmes 'reveal a multiple, often confused, mode of address in which, for example, experts are requested to inform the public and then ridiculed for their jargon; similarly, the host stimulates opposition to accepted views and then claims to be on the side of the majority (typically constructed as the 'underdog').' In contrast, the RSTV panel shows lacked the high-pitched and shrill

voice. Gently conducted, it provided place for various perception from experts as well as provided scope for the voice of the viewers. The shows were not acrimonious drama intended to create sensation, but informed debate.

**b)** Television story, even science and technology stories have to be 'new'; timeliness and relevance are basic mantra of media. Often TV media interpret the 'new;' to imply 'new, improved X'. Technology shows, from cars to electronic goods are essentially narrated with this construct of 'new'. A 'new' mobile phone with 'advanced camera system' that is able to take brighter and clearer photos; or a battery that last longer by 25%. A product may be 'improved' in the sense of giving greater volume for the same price, or by having been made lighter, less bulky or constructed of more durable materials. This rhetoric of 'new' is aimed at creating wants and promoting consumerist culture. However, there is another crucial sense in which the word 'new' can be used. It is in the sense of being 'novel' or unfamiliar. Even an object that is old may be unfamiliar to the audience and hence will appear as 'new' from the perspective of the viewer. If one goes beyond the consequences of innovation to create 'new' but to unpack the crucial working parts generally hidden then one can unravel 'novel'; a new kind of 'spectacle'. In this sense the quest for the 'new' is thirst for knowledge. Private TV created wants and desires that were not always synchronous with the needs or financial resources of the people (Ninan S 1995 and Crawley 2001). The episode of 'Mars and Beyond' in RSTV shows, that public broadcasters can perhaps attempt to remedy the distortion of commercial TV and provide alternate media space.

**c)** One reputed media person commented in private to the author that it is due to highlighting of the RSTV that they are also moved to conceive of programmes on Mars Mission and the science behind it. Surely, without RSTV every channel would have covered the news of Mars insertion; perhaps would have also had live telecast during that time. After all it is a spectacle; fitting well with the current media ethos. May be they would have also covered the crucial test firing of LAM engine on September 22; it also had necessary drama.

Nevertheless, it is clear that apart from NDTV, which has an able in-house science correspondent, no other media would have arranged a talk show, panellist or audience based interactions for many days before the D-Day. It is the climate of expectation that was engendered by RSTV that impelled most channels to devote time and space for the science related stories. It is pertinent to note that the coverage of Mars insertion or result of crucial test firing of the LAM engine would have been mere coverage. However, the moment the channels allocated slots to panel discussions, phone-in programmes and so on, the 'novelty' had to be placed on the table. Science communication went beyond mere information into a dialogue. Public broadcasters can play a role model for the rest of the visual media and impact on the agenda setting a crucial way.

**d)** Dinesh C. Sharma a Delhi-based science journalist and author writes "Travelling from my home in Mayur Vihar to the studios of the Rajya Sabha Television in New Delhi on the evening of September 24, I struck a conversation with the driver of the car that the channel had sent to fetch me. The driver must have been ferrying guests for television shows on the channel through the day. Therefore, he knew that a major news event was probably on. "Mangal par apni machine pahunch gayi kya saab (has our machine reached the Mars)?" he asked me inquisitively. When I answered in affirmative, he asked me how far was the planet from the earth. Was it beyond moon? How much time does it take to reach there? And so on, ... The conversation pleasantly surprised me and I realized that, beginning from September 22, the non-stop coverage of the Mars mission along with stories in vernacular newspapers, had indeed percolated down. Inside television studios, panellists like me were struck with curious questions coming from Jammu to Mysore, and from different corners of the country about Mars, astronomy, and science in general." Further, he says, "It is incredible that RSTV gave non-stop coverage to the event for one full week, calling it "Mars & Beyond: Journey of Science in India". Through the week, interviews with scientists, documentaries, talk shows, phone-in and studio discussions on different aspects of Indian space programme were featured. The response of people from different cities and those gathered at science centres and planetariums across the country was truly



remarkable. In all, the space mission proved to be a great experiment in science communication and science popularization, besides an occasion to gauge public understanding of science. Even if one discounts the usual celebratory and 'proud' element resulting media hype, the public response appeared to be genuine and deep (Sharma 2014)."

A well programmed initiative by a public broadcaster, thus we can see can not only inform and educate the audience but also act as an agenda setter in the media world. Public broadcasters thus not only have direct impact but also can induce indirect response from other media channels to take up relevant issues. For a country like India, which Amartya Sen aptly describes, 'islands of California amongst ocean of sub-Sahara Africa', a strong and vibrant public broadcaster is necessary to ensure deriving at least modest social role from the commercial TV channels.

The crucial question before the science communicators in India are as Dinesh C. Sharma (2014) wonders, "Will the momentum created by MOM continue? Will ISRO take this public engagement to the next level? Will other scientific agencies make special efforts to engage people in science in some way? How will the educational system and science popularization agencies take the agenda forward? Will more young students be attracted to take a career in science or research? More critically, will scientific understanding of the planetary system and the universe lead to rational thinking and rejection of superstitions related to the impact of planetary movement on our lives? Will MOM helps end discrimination against so-called 'Manglik' boys and girls in the matrimonial market?"

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